ATTACHMENT C

MONITORING WELL WORKPLAN AND MONITORING WELL
INSTALLATION REPORT REQUIREMENTS
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
DEUEL VOCATIONAL INSTITUTION
SAN JOAQUIN COUNTY

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report, which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan

A. General Information:
   - Purpose of well installation project
   - Copies of County Well Construction Permits (to be submitted after workplan review)
   - Monitoring well locations and rationale
   - Survey details
   - Equipment decontamination procedures
   - Health and safety plan
   - Topographic map showing any existing wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details:
   - Describe drilling technique
   - Sampling intervals, and logging methods

C. Monitoring Well Design:
   - Casing diameter and centralizer spacing (if needed)
   - Borehole diameter
   - Depth of surface seal
   - Well construction materials
   - Diagram of proposed well construction details
   - Type of well cap, bottom cap either screw on or secured with stainless steel screws
   - Size of perforations and rationale
   - Grain size of sand pack and rationale
   - Thickness and position of bentonite seal and sand pack
   - Depth of well, length and position of perforated interval

D. Well Development:
   - Method of development to be used
   - Method of determining when development is complete
   - Parameters to be monitored during development
   - Method of development water storage and disposal

E. Well Survey:

Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
Describe what well features will be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)
Vertical accuracy shall be to at least 0.01 foot

F. Well Sampling:
Minimum time after development before sampling (48 hours)
Well purging method and amount of purge water
Sample containers, collection method, and preservation method
Table describing sample volumes, sample containers, preservation agents, and hold times
QA/QC procedures

G. Water Level Measurement:
The elevation reference point at each monitoring well shall be within 0.01 foot. Ground surface elevation at each monitoring well shall be within 0.01 foot.
Method and time of water level measurement shall be specified.

H. Proposed time schedule for work.

SECTION 2 – Groundwater Sampling and Analysis Plan

A. General Information:
Site Location
Monitoring well locations
Monitoring well construction details including elevation, well depth, casing material and size, and screen interval
Equipment decontamination procedures
Health and safety plan
Topographic map showing any existing wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Water Level Measurement:
Ground surface elevation at each monitoring well shall be within 0.01 foot.
Method and time of water level measurement shall be specified
Water level in well shall be allowed to equilibrate prior to measuring the depth to water

C. Well Sampling:
Well purging method and amount of purge water, purge water storage
Sample containers, collection method, and preservation method
Table describing sample volumes, sample containers, preservation agents, and hold times
Identification of analytical laboratory
Chain of custody procedures
QA/QC procedures

D. Proposed time schedule for work.

SECTION 3 - Monitoring Well Installation Report

A. Well Construction:

Number and depth of wells drilled
Date(s) wells drilled and completed
Description of drilling and construction
Scaled map of facility site features including monitoring wells, buildings, storage ponds, waste piles, etc.
A well construction diagram for each well must be included in the report, and must contain the following details:

Drilling Contractor and driller name
Depth of open hole (same as total depth drilled if no caving occurs)
Method and materials of grouting excess borehole
Footage of hole collapsed
Length of slotted casing installed
Depth of bottom of casing
Depth to top of sand pack
Thickness of sand pack
Depth to top of bentonite seal
Thickness of bentonite seal
Thickness of concrete grout
Boring diameter
Casing diameter
Casing material
Size of perforations
Well elevation at top of casing
Stabilized depth to groundwater
Date of water level measurement
Monitoring well number
Date drilled
Location

B. Well Development:

Date(s) of development of each well
Method of development
Volume of water purged from well
How well development completion was determined
Method of effluent disposal
Field notes from well development should be included in report.

C. Well Survey:

Identify the coordinate system or reference points
Survey the well casing with the cap removed (horizontal and vertical coordinates)
Registered Engineer or Licensed Surveyor’s report and field notes in appendix
Describe the measuring points (i.e. ground surface, top of casing, etc.)
Tabular survey data